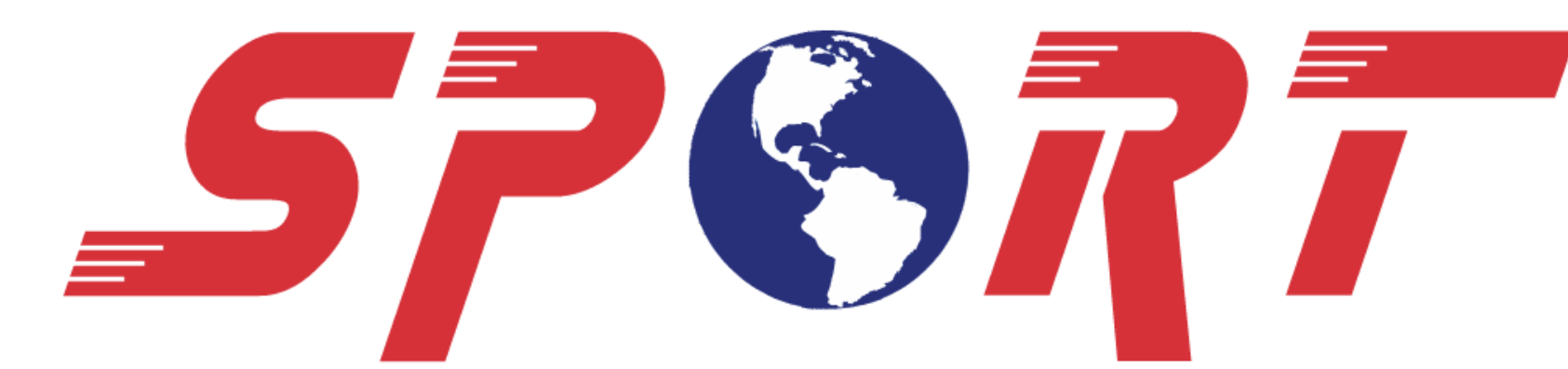


JPSS Proving Ground Activities with NASA's Short-term Prediction Research and Transition (SPoRT) Center



¹Lori Schultz, ¹Matthew Smith, ¹Kevin Fuell, ²Geoffrey Stano, ¹Anita LeRoy, ¹Emily Berndt, ³Andrew Molthan

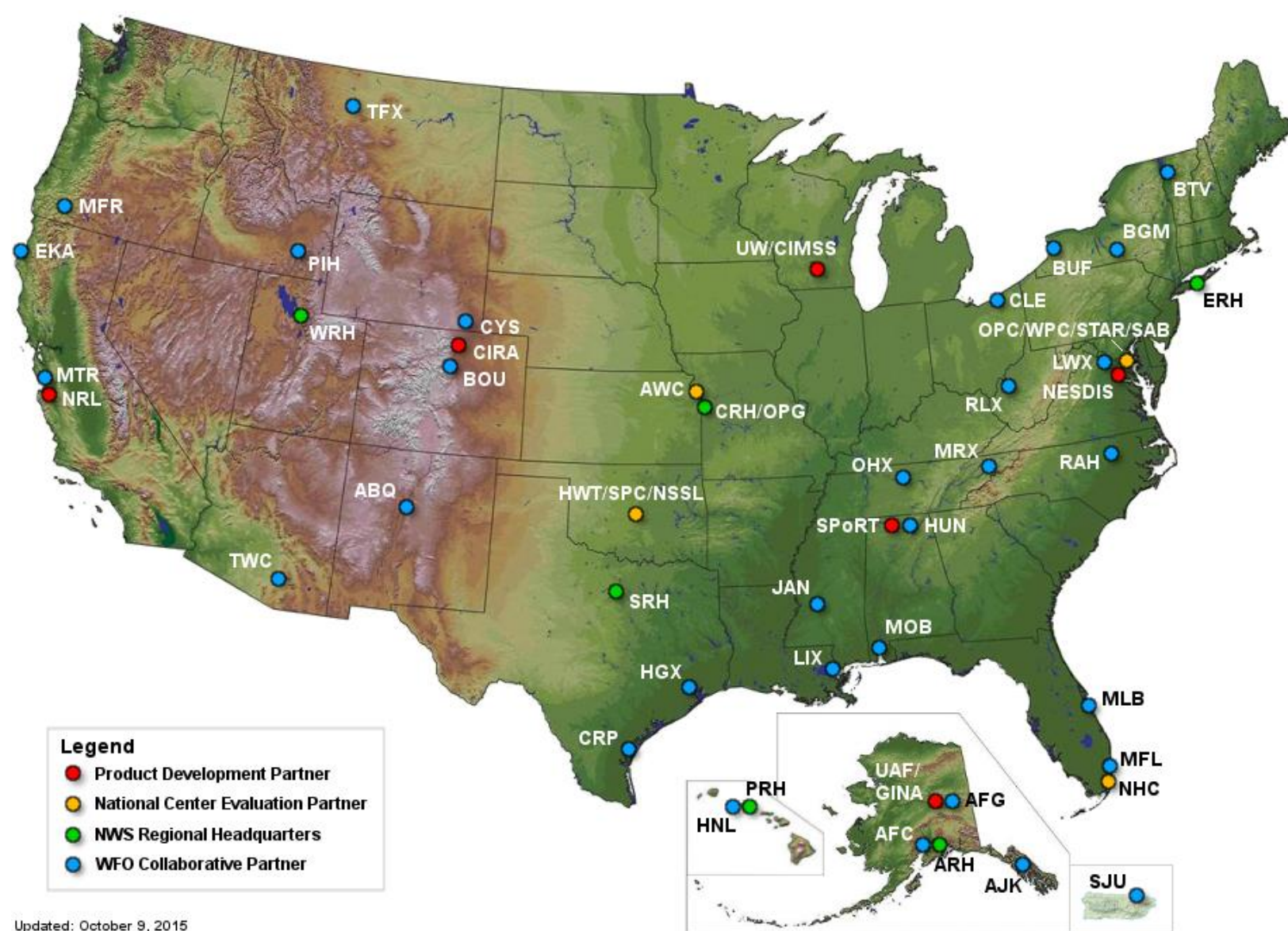
¹University of Alabama in Huntsville, Huntsville, Alabama

²ENSCO, Inc., Huntsville, Alabama

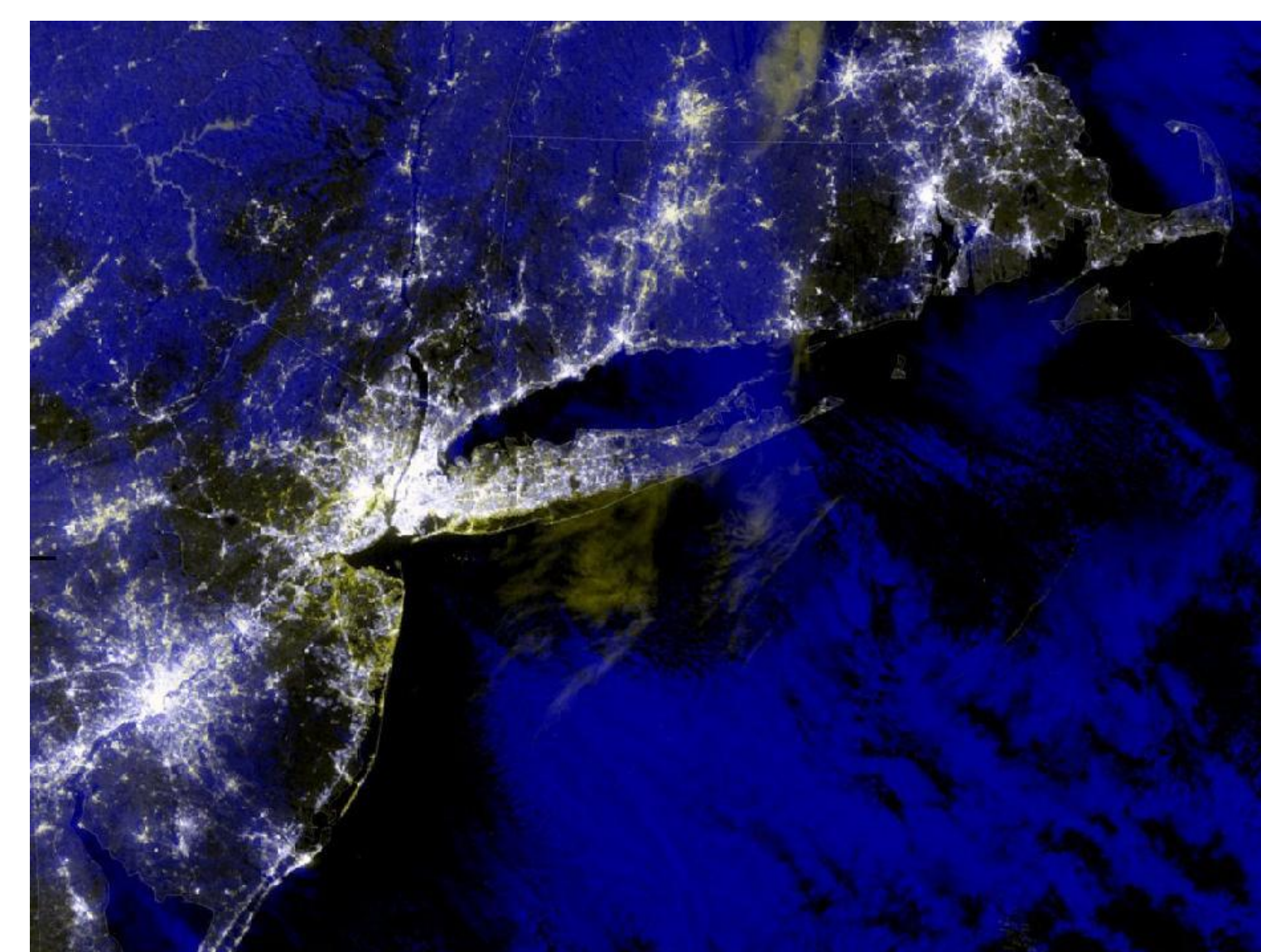
³NASA Marshall Space Flight Center / Earth Science Office, Huntsville, Alabama

NASA SPoRT is..

continuing work from the previous 3 years of JPSS Proving Ground activities and is working to expand those activities by



SPoRT has built collaborative partnerships with about 30 NWS forecast offices, and several National Centers and River Forecast Centers. VIIRS single-channel and RGB composites were provided to meet the specific forecast challenges of each office. VIIRS products were transitioned to the NWS AWIPS II system.



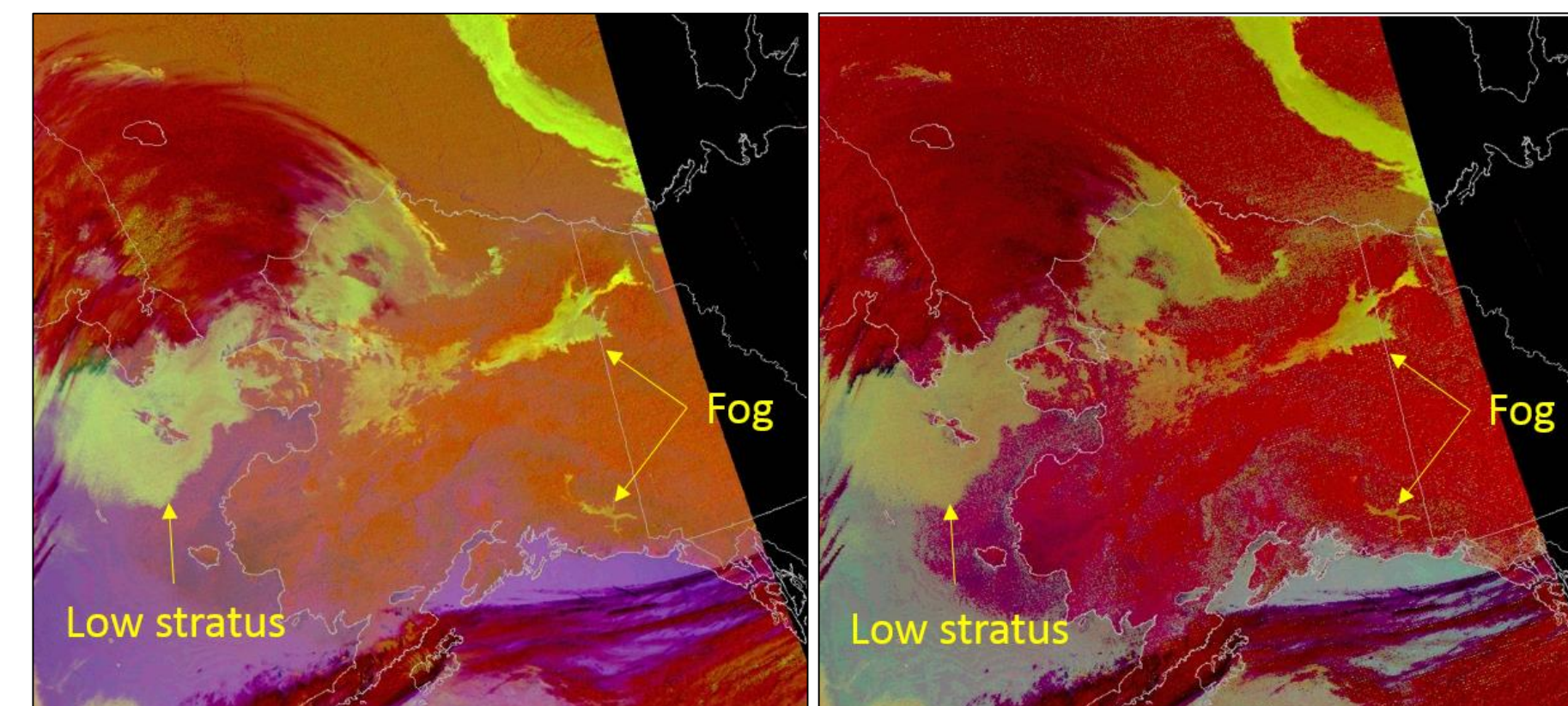
SPoRT introduced VIIRS data to NWS forecasters in 2013. Day-Night Band data was instrumental in providing federal agencies with near real-time 'blackout' imagery (RGB composite imagery using DNB) after Tropical Storm Sandy caused major power outages across the northeast in late 2012.

...working with forecasters to provide VIIRS products to meet their forecast challenges,

NASA SPoRT provides VIIRS imagery from Suomi-NPP, as well as MODIS (Terra & Aqua) and soon AVHRR (MetOp-A, -B & NOAA-17, -18, -19). These higher resolution instruments have led the way in preparing NWS forecasters for imagery from the upcoming JPSS and GOES-R platforms. An integral part of the SPoRT paradigm is to improve products if an improvement can be made...

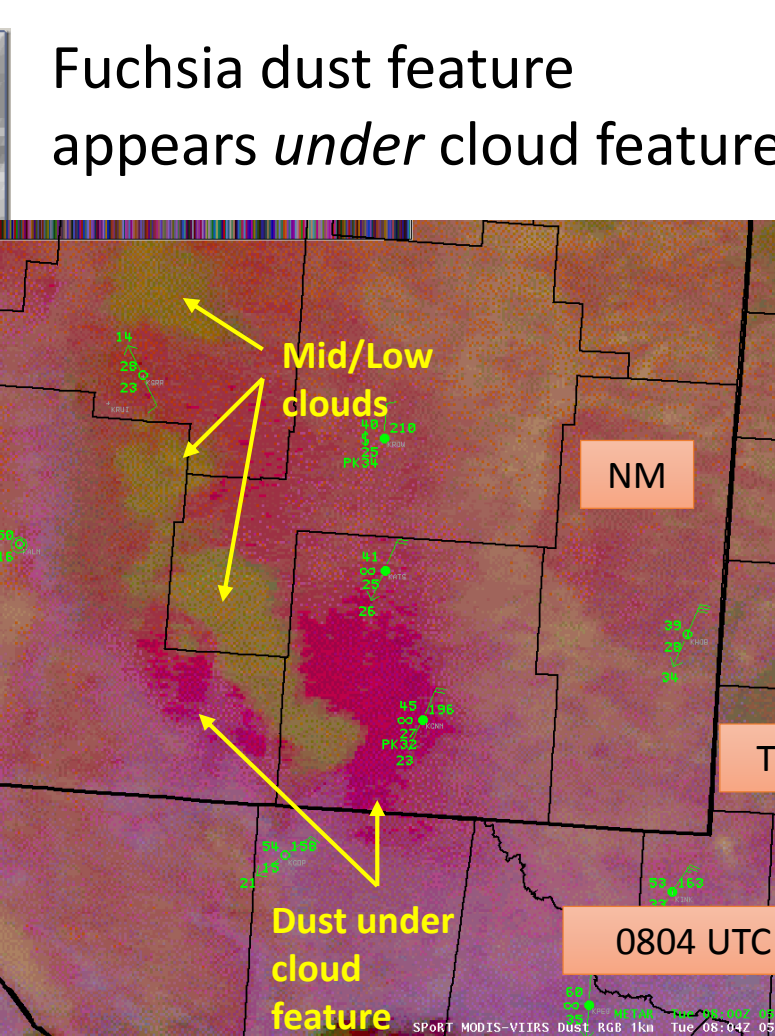
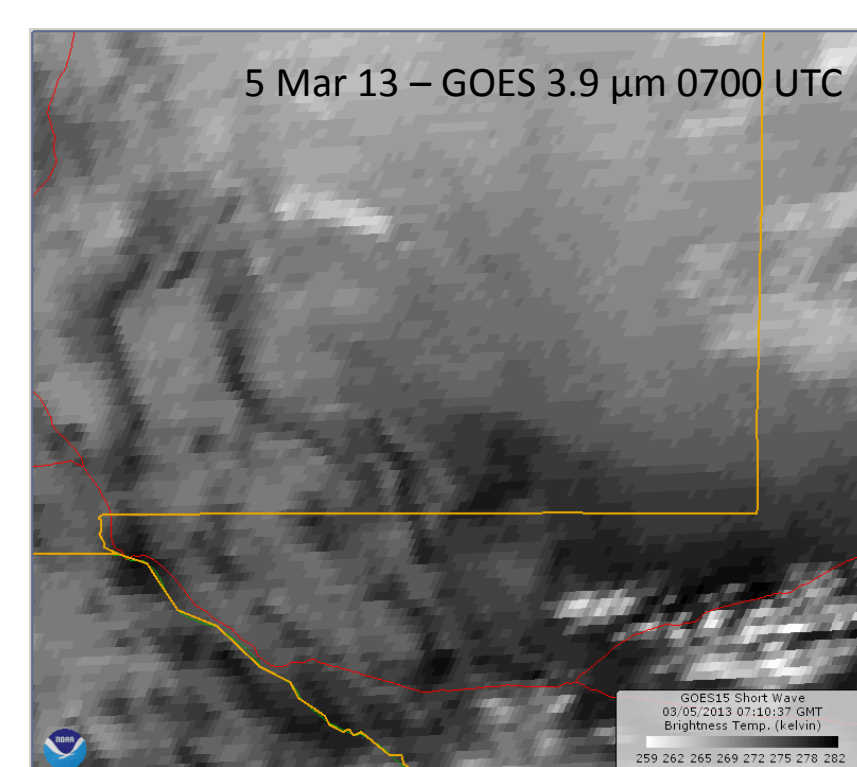
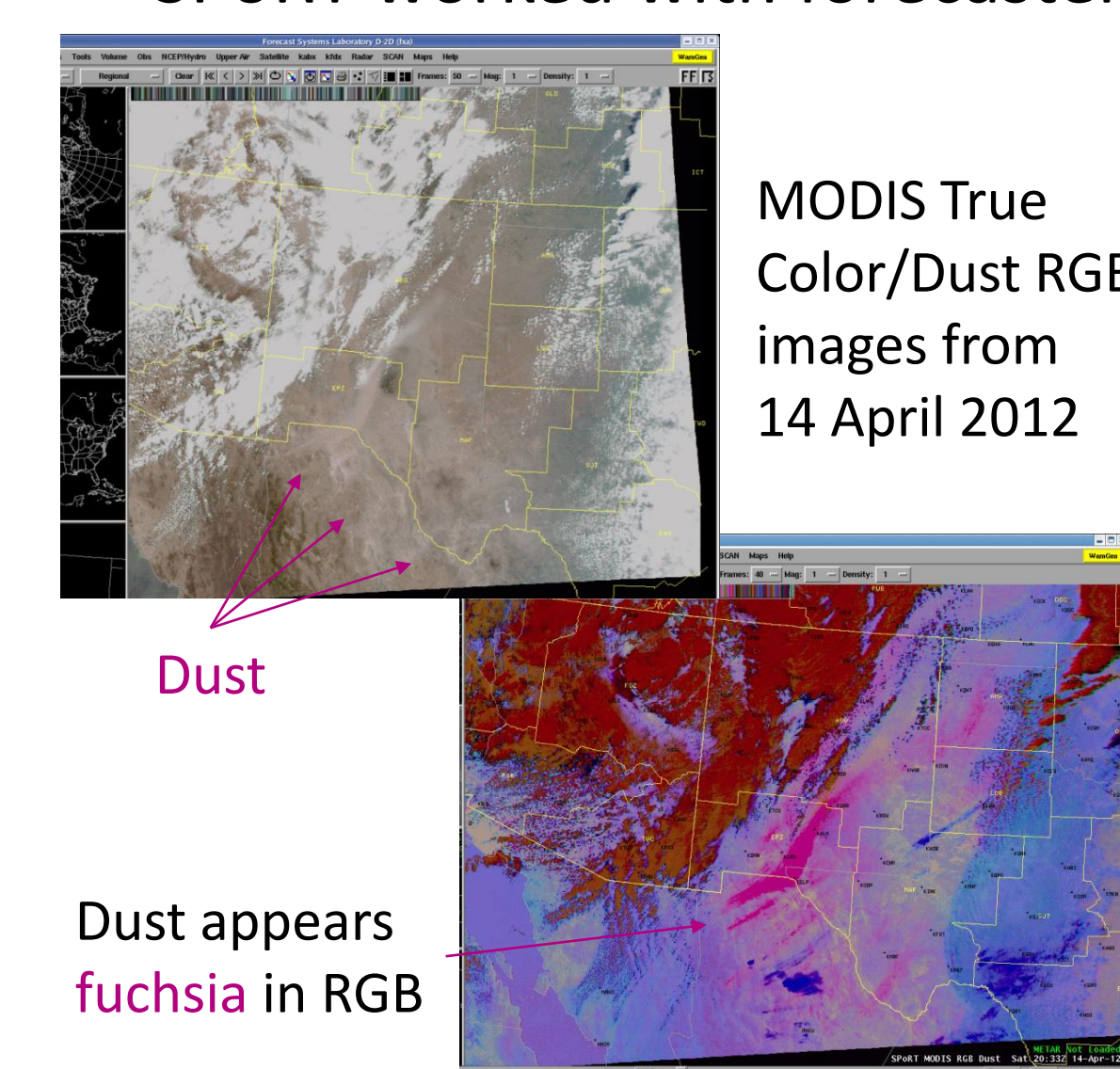
VIIRS Nighttime Microphysics (AK)

VIIRS 24-hr Microphysics (AK)



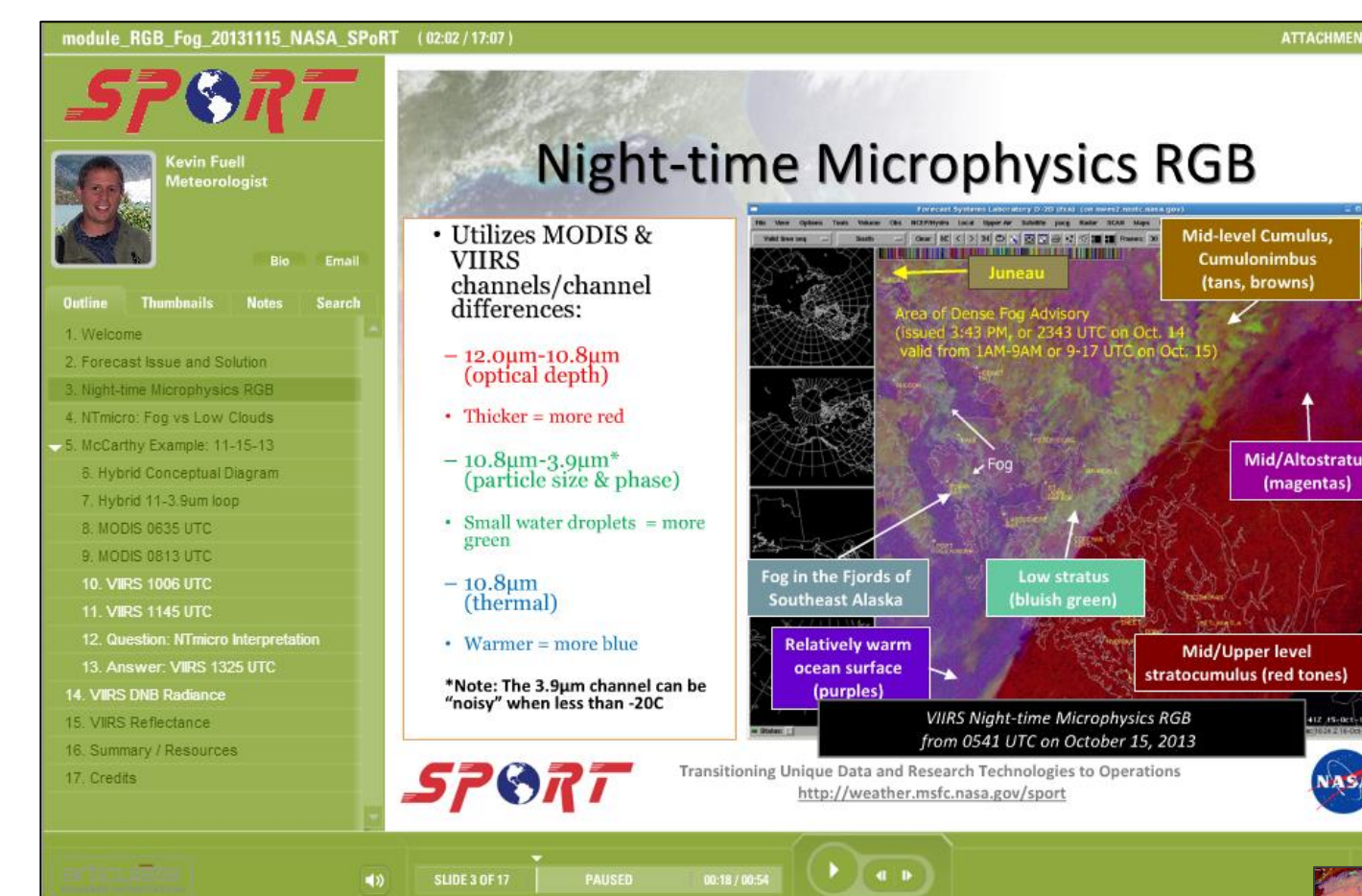
Alaska forecasters had problems with the Nighttime Microphysics RGB imagery due to a lack of, well – nighttime (high latitude summer). SPoRT provided them with a version of the 24-Hr Microphysics RGB – usable regardless of daylight.

SPoRT worked with forecasters in Albuquerque, NM to identify blowing dust.



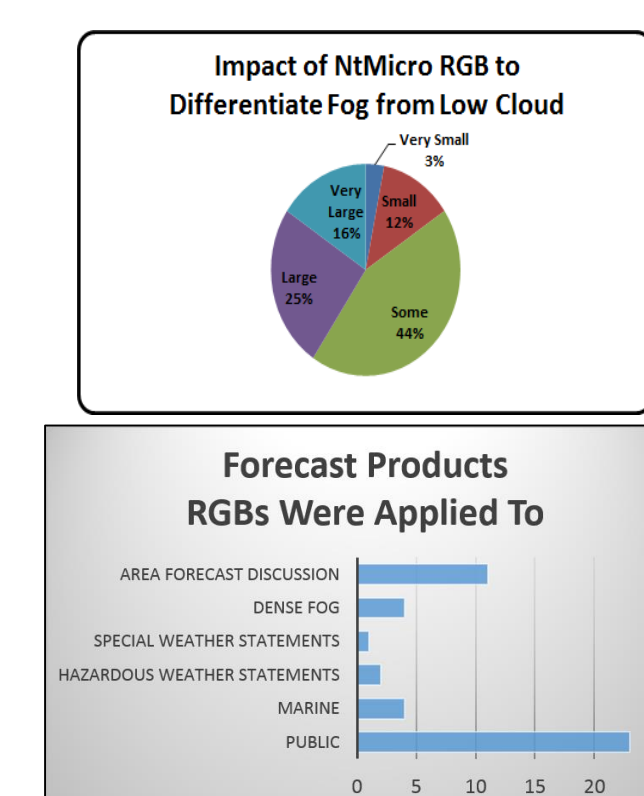
...providing training on VIIRS and other JPSS products to forecasters at Weather Forecast Offices and National Centers,

Before products are transitioned to operations, training materials are prepared



Training Modules: These short modules are tailored to be both product and region-specific....examples from Florida are irrelevant to forecasters in Alaska. Along with the science, operational examples are narrated through. These videos further extend the content provided by other training groups, like COMET and the WDTB.

Quick Guides: These short, 1-page, 2-sided, product specific sheets act as a refresher to the related training modules and provide forecasters with specific usage details as well as caveats. They are usually provided at the forecast desk for quick reference.



After forecasters have been trained, SPoRT holds a 6-8 week intensive evaluation, scheduling it during a season in which the product is most likely to be used frequently. Forecasters provide feedback via very brief online surveys. An evaluation summary report is written, providing the data provider with impact metrics.

...collaborating to develop/improve CrIS/ATMS products (NUCAPS) to enhance detection and display of extremely cold air aloft,

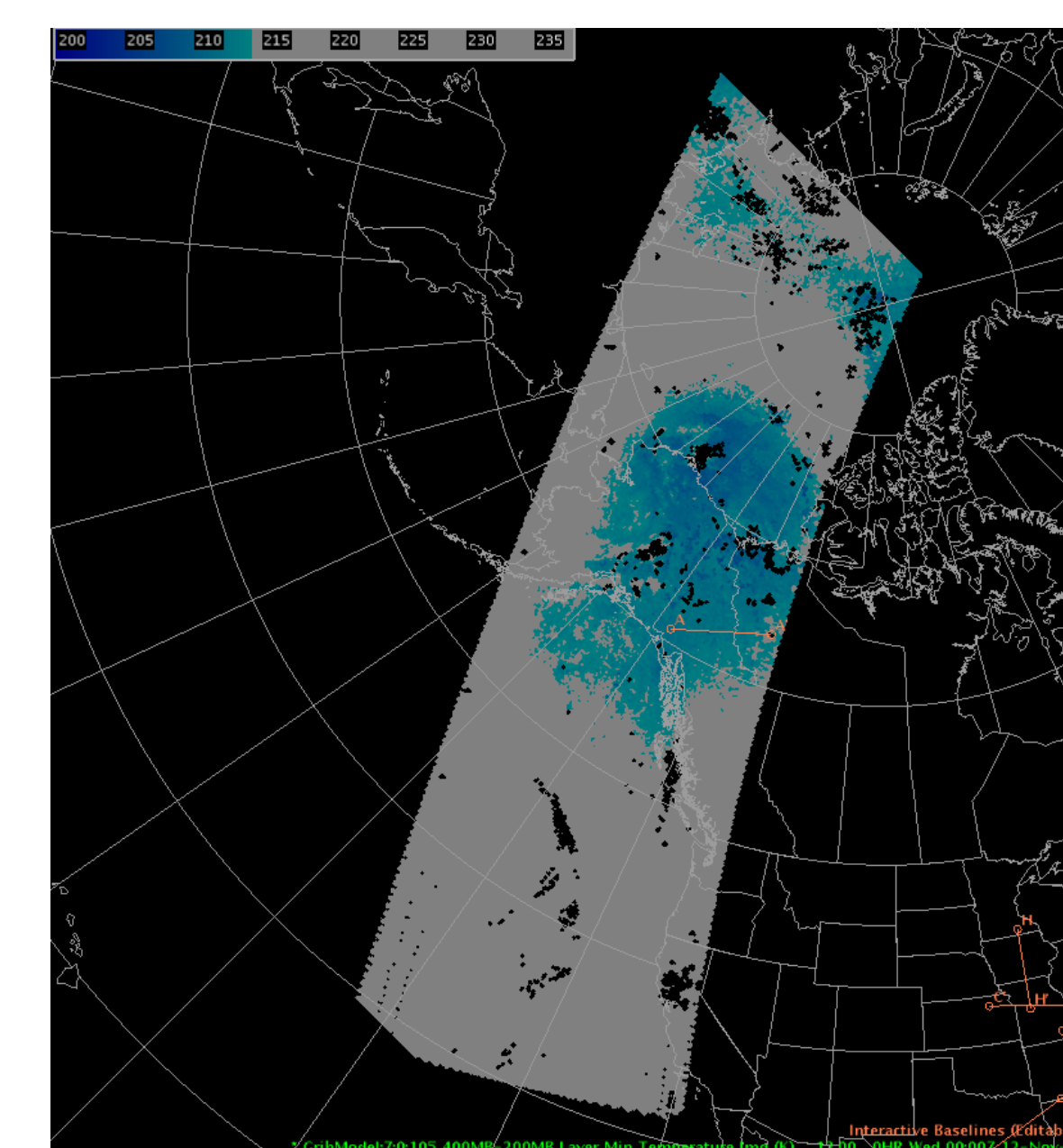
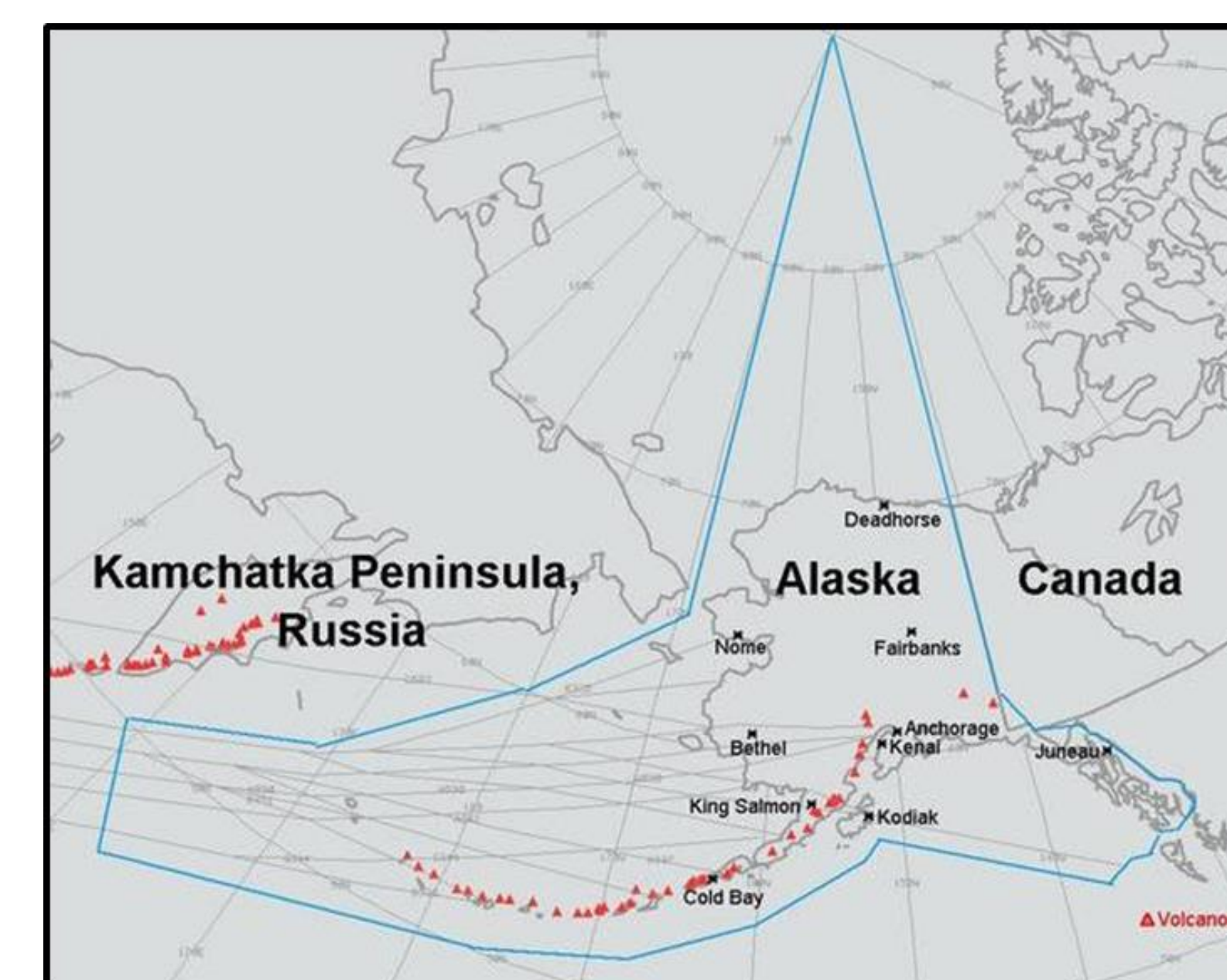
Cold Air Aloft (CAA; -65C and colder) is potentially hazardous to aircraft due to the threat of fuel crystalizing or freezing.

The Anchorage, AK Center Weather Service Unit (CWSU) provides Meteorological Impact Statements to Air Traffic Controllers to direct flights around CAA regions.

In data-sparse Alaska, forecasters traditionally rely on analysis/model fields, limited radiosonde observations, and pilot reports to 'guess' the full extent of the CAA.

The Cross-track Infrared Sounder (CrIS) provides hyperspectral soundings may allow forecasters to observe the 3D extent of CAA in near real-time where conventional observations are very limited.

The Anchorage, AK CWSU extensive domain handles an enormous amount of air traffic

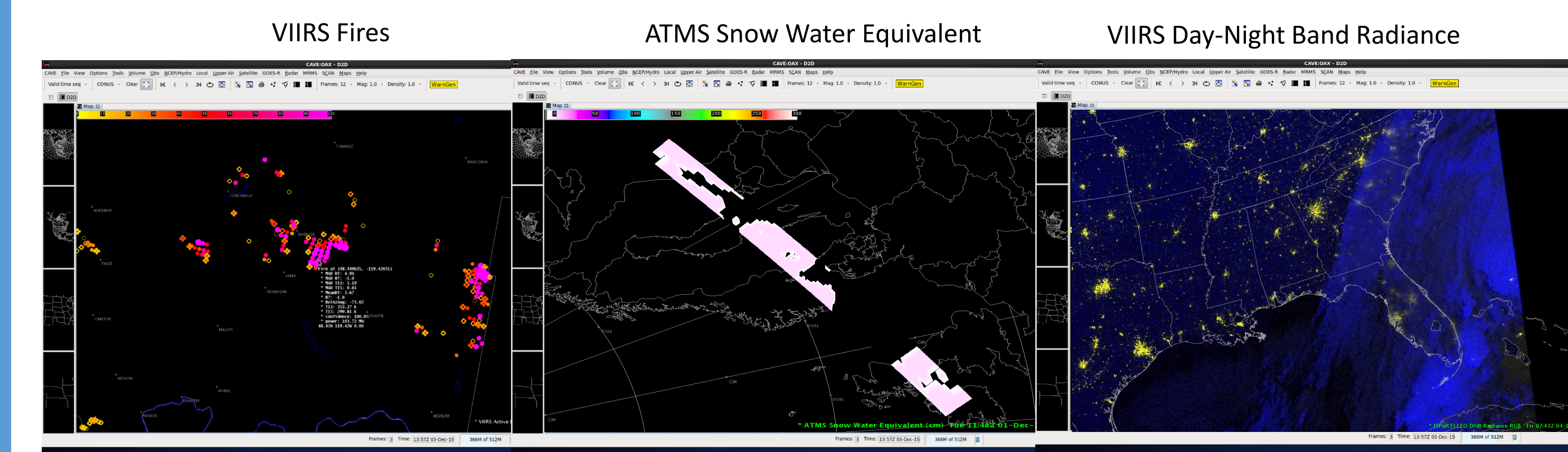


A possible CAA visualization in AWIPS II using sample 8-level University of Wisconsin/CIMSS Dual Regression gridded product. The minimum temperature in a layer from 400 to 200 hPa is depicted.

...providing training on AWIPS II software design and coding to NOAA developers and others via the EPDT,

NASA SPoRT has led an AWIPS II developer training and collaboration project called the Experimental Product Development Team (EPDT) for the last three years.

EPDT brings together developers from various agencies such as NASA, NWS, and various cooperative institutes to learn about developing plug-ins for the AWIPS II system. Part of the learning process within EPDT is to facilitate groups to work on projects during short development meetings - called "code sprints". SPoRT partnered with CIRA to hold a code sprint in Fall 2015 to develop AWIPS II plug-ins for JPSS. Teams developed plugins to better visualize NUCAPS sounding data and VIIRS Active Fires, and worked to ensure that VIIRS data will be displayed correctly in AWIPS II when new products are made available.



Three of the EPDT-developed display configurations are shown below. The VIIRS DNB (right), known as a client-side RGB, was generated with code developed by a code sprint team. The team joined existing baseline AWIPS II capabilities to implement conventional RGB "recipes" (e.g., those provided by EUMETSAT) – performing all necessary calculations on the client-side system.

...and developing new products to enhance detection of stratospheric ozone intrusions.

During Arthur (2014), the Air Mass RGB product and the SPoRT ozone products were available to National Center forecasters via the Proving Ground.

NOAA Unique CrIS/ATMS Processing System (NUCAPS) soundings are available to forecasters in AWIPS-II but soundings are typically used to forecast severe convection.

This project focuses on an additional application for NUCAPS soundings and investigates their utility for anticipating stratospheric drying in the pre- and post-extratropical transition environment.

